

ABSTRACT OF THE DISCLOSURE

An avalanche photo-detector (APD) is disclosed, which can reduce device capacitance, operating voltage, carrier transport time and dark current as well as increasing response speed and output power. Thus, an
5 avalanche photo-detector (APD) with high saturation power, high gain-bandwidth product, low noise, fast response, low dark current is achieved. The APD includes an absorption layer with graded doping for converting an incident light into carriers, an undoped multiplication layer for multiplying current by means of receiving carriers, a doped field buffer
10 layer sandwiched between the absorption layer and the multiplication layer for concentrating an electric field in the multiplication layer when a bias voltage is applied, and an undoped drift layer sandwiched between the absorption layer and the field buffer layer for capacitance reduction.